Ness Ultimate Series

10x Mini Rugged Speed Dome

Installation Manual

CCTV Products

Consistent™ Commitment To Value

Installation Manual revision 2.5

Preface

The information given in this manual was current when published. The company reserves the right to revise and improve its products. All specifications are subject to change without notice.

Notice

This manual provides the installation information for indoor and outdoor Vandal Proof Mini Speed Domes. To work with the dome cameras, any installer or technician must have the following minimum qualifications:

- A basic knowledge of CCTV systems and components
- A basic knowledge of electrical wiring and low-voltage electrical hookups
- Have read this manual completely

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Important Information

Before proceeding, please read and observe all instructions and warnings in this manual. Retain this manual with the original bill of sale for future reference and, if necessary, warranty service. When unpacking your unit, check for missing or damaged items. If any item is missing, or if damage is evident, DO NOT INSTALL OR OPERATE THIS PRODUCT. Contact your dealer for assistance.

Regulation

CE	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

	This symbol on the product or on its packaging indicates that this product shall not be treated as household waste in accordance with Directive 2002/96/EC. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By proper waste handling of this product you ensure that it has no negative consequences for the environment and human health, which could otherwise be caused if this product is thrown into the garbage bin. The recycling of materials will help to conserve natural resources. For more details information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

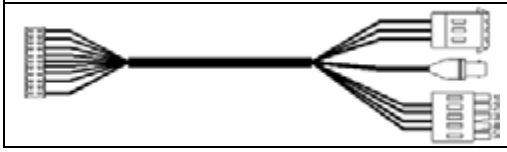
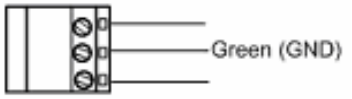
	Compliance is evidenced by written declaration from our suppliers, assuring that any potential trace contamination levels of restricted substances are below the maximum level set by EU Directive 2002/95/EC, or are exempted due to their application.

Warnings and Cautions

- **Handle the camera carefully**
  Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handing or storage.

- **Installing electricity wiring carefully**
  Ask qualified personnel of electrical wiring for the installation. Please note that input electricity to the unit is at tolerance of DC12V/AC24V ± 10%.

  The camera is capable of surge protection; ensure AC power model unit grounded appropriately against damage of heavy current or electric shock.
  Refer to the camera's installation guide for more information.

AC model data cable	*AC power input: 3-pin terminal block*
	

- **Do not disassemble the camera**
  To prevent electric shock, do not remove screws or covers. There are no user serviceable parts inside. Ask a qualified service person for servicing.

- **Do not block cooling holes on the bracket**
  This camera has a cooling fan inside. Blocking the cooling holes leads to build up of heat the camera and may cause malfunction.

- **Do not operate the camera beyond the specified temperature, humidity or power source ratings**
  Use the indoor dome camera under conditions where temperature is between 0°C ~ 40°C (32°F ~ 104°F) and the outdoor camera under conditions where temperature is between -30°C~45°C (-22°F~104°F), and humidity is below 90%.

- **Do not expose the indoor dome camera to rain or moisture, or try to operated it in wet areas**
  The indoor dome camera is designed for indoor use or locations where it is protected from rain and moisture. Turn the power off immediately if the camera is wet and ask a qualified service person for servicing. Moisture can damage the camera and also create the danger of electric shock.

- **Do not use strong or abrasive detergents when cleaning the camera body**
  Use a dry cloth to clean the camera when dirty. In case the dirt is hard to remove, use a mild detergent and wipe gently.

- **Never face the camera towards the sun**
  Do not aim the camera at bright objects. Whether the camera is in use or not, never aim it at the sun or other extremely bright objects. Otherwise, the camera may be smeared or damaged.

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1. Introduction

The Vandal Proof Mini Speed Dome Camera is a new subcompact high speed dome camera designed to deliver superb performance and durability with an intelligent and stylish housing that is suitable in any security and surveillance installation. With weather resistant housing (IP66 standard) and optional sunshield, the outdoor dome camera can face harsh circumstances.

The Vandal Proof Dome Camera provides two models of new generation advanced DSP color camera:

Indoor Vandal Proof Mini Speed Dome

Faster and Smoother object tracking capability
The most impressive, economical indoor application
Compact 4.2”, stylish and intelligent design for easy installation

Outdoor Vandal Proof Mini Speed Dome

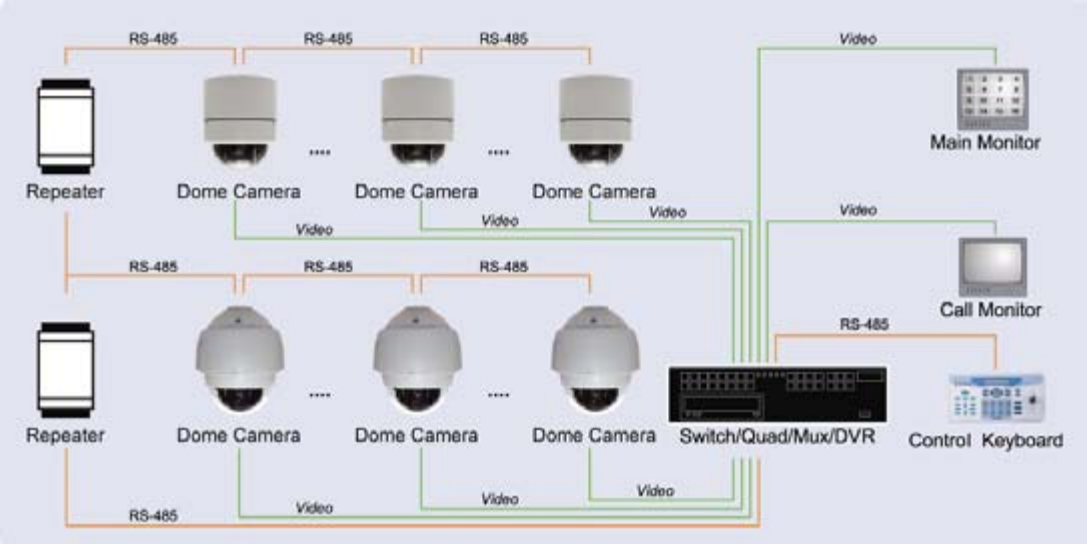
For both indoor and outdoor applications
Flexible accessories enable the most effective installations
Weather resistant housing and sunshield for harsh environment

General Operation Requirements:

A minimum of one control device is required for operation, such as a control keyboard, a DVR or a PC. The Vandal Proof Dome Cameras contain a built-in receiver that decodes commands originating from a control device.

Both Indoor and Outdoor Vandal Proof Dome Cameras support one cabling for easy installation. Additionally, large set of built-in protocols provide connectivity to other surveillance systems. The built-in protocols include DynaColor, Pelco, VCL, Philips, AD-422, etc, which allow the Vandal Proof Mini Dome Camera series to be integrated with other suppliers' surveillance systems.

Connect dome cameras to other devices, as shown in the diagram, to complete a video surveillance system.



NOTE: To extend the network distance up to 1.2 km (4000 feet) and to protect the connected devices, it is highly recommended to place a repeater at the mid-point. However, a repeater may be needed in the network distance less than 1.2 km if the used cables are not the CAT 5, 24-gauge cables (see 3.4.4 RS-485 Connector). Refer to the repeater's manual for detailed information.

2. Standard Package Content

Before proceeding, please check the box contains the items listed here. If any item is missing, or if damage is evident, DO NOT install or operate the product and contact your dealer for assistance.

Indoor Vandal Proof Mini Speed Dome

Dome Body
with 4.2” cover

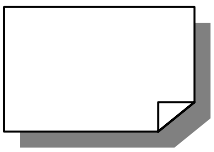
Hard Ceiling Mount and Decoration Ring

12V DC Power Adaptor Power Cord (12V DC Only)

Fixing Plate
Self-tapping Screws
Plastic Screw Anchors

50-cm Data Cable for Power Supply, Video and RS-485 (for 12V DC)

50-cm data cable for Power Supply, Video and RS-485 (for 24V AC)



Quick Guide

CD: Operation Manuals

Outdoor Vandal Proof Mini Speed Dome

Dome Body

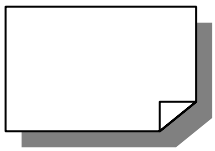
Data Cable for Power Supply, Video and RS-485

Lubricant & Screws

5.4” Optical Cover

50-cm, 13-pin Alarm Cable

Water-proof Rubber



Quick Guide

CD: Operation Manuals

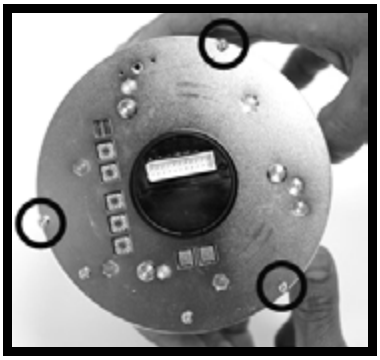
3. Dome Setups and Cable Connection

Before installing or connecting the dome camera, please refer to this section and complete preparation, switch setting and communication switch settings.

3.1 Preparations for Indoor Dome Camera Setups

Follow the steps below to remove the PE cushion inside the dome cover and take off the lens cap to prepare for subsequent switch setting.

Step 1: Unpack the dome package and take out the dome body.



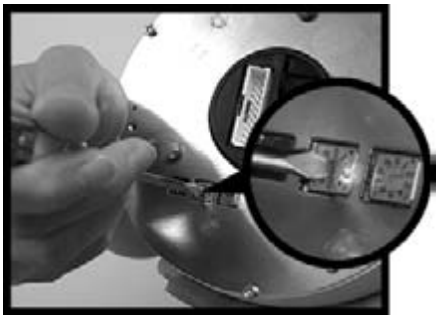
Step 2: Unscrew the three screws on the dome back, as marked in the figure, and remove the dome housing with the dome cover.

Step 3: Remove the PE cloth sheet and take off the lens cap.

Step 4: Replace the dome housing with the cover back. Then screw it and the dome back together.

When replacing the dome housing back, please align the cooling fan with the vent on the dome housing.

Step 5: Set the switches located on the bottom of the dome body. Refer to section 3.3 Dome Setups for detailed information about various switch setting.



3.2 Preparations for Outdoor Dome Setups

This installation procedure is for the outdoor dome equipped with sunshield housing. Please follow the steps below to complete dome housing installation.

STEP 1

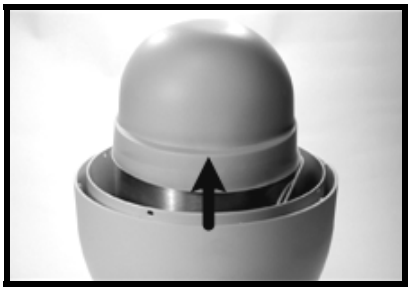
Unpack the dome package and take out the dome body.

STEP 2

Rotate the top holder and take it off from the dome body.

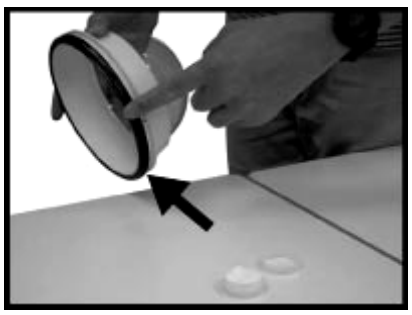
STEP 3

Remove the protective cover and PE sheet.



STEP 4

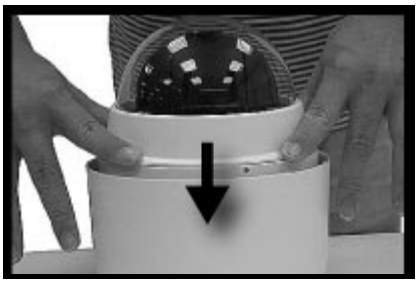
Attach the dome cover to the dome body. Before doing that, apply some lubricant on the cover's water-proof rubber to make the installation process smoother.



Note that the tiny protrusion on the dome cover must align with one of the four holes on the dome body.

STEP 5

Gently pressure the dome cover downward with two hands on the side of it.



DO NOT press the cover, as shown in the figure; this might cause damage to the dome body.

STEP 6

Screw the dome cover and body together.

STEP 7

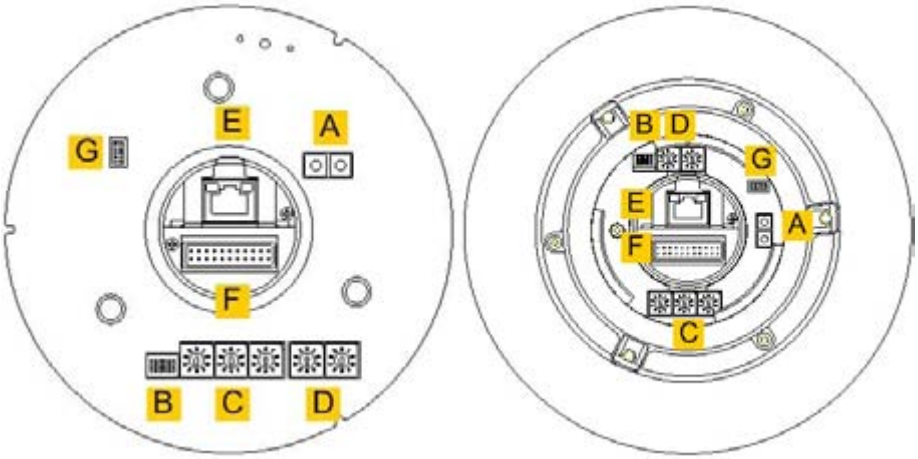
Set the switches located on the bottom of the dome body. Refer to section 3.3 Dome Setups for detailed information about various switch setting.

3.3 Dome Setups

Before connecting the dome camera to other devices of CCTV system, please complete the dome ID and communication switch setting. These switches are located on the bottom of the dome camera.

3.3.1 Switch Definition

Please refer to the following figures and table for switch location and definitions.



Indoor Dome **Outdoor Dome**

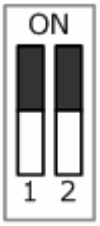
A	Reserved
B	Communication Switch
C	Dome ID Switch
D	Dome Control Protocol Switch
E	RJ-45 Connector (for IP Dome only)
F	22-Pin Connector
G	ISP Connector (for FW upgrade)

3.3.2 Communication Switch Setting

The table below shows the function of each pin within the Communication Switch.

Communication Switch	**SW 1**	RS-485 Setting
	SW 2	
	SW 3	Termination
	SW 4	Line Lock
	SW 5	System Initialization
	SW 6	Reserved

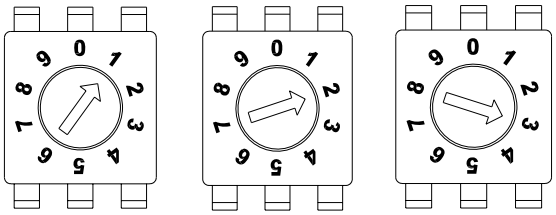
RS-485 is the interface that communicates the dome camera and its control device; for this reason, the RS-485 setup of the dome and the control device must be the same. The RS-485 default setting is half-duplex (see the diagram follows). Please do not change the default setting without qualified specialist or supplier's notice. As for the SW 3 and SW 4, they are used for termination and Line Lock adjustment respectively. The SW 5 is mainly used when users want to restore the camera to the factory default status; moreover, once firmware upgrade is carried out, users need to reset the SW 6 afterward.

RS-485 Setting	
Half-duplex	Full-duplex
	

3.3.3 Dome ID Setting

Please change the dome ID if there is more than one dome on the same installation site. Before installing the dome camera, use the switch to change your speed dome ID by turning the arrow to the desired number respectively. For instance, if the dome ID is 123, the ID switch should be set as shown below.

NOTE: No two domes should be given the same ID, or communication conflict may occur. In addition, the number “0” should locate upwards as shown in the diagram for correct switch definition.



Centesimal Digit Decimal Digit Single Digit it

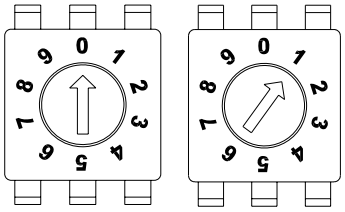
NOTE: The number “0” should locate upwards as shown in the diagram above for correct switch definition.

3.3.4 Dome Control Protocol Setting

Define the protocol you are going to use basing on the devices of your surveillance system. Generally, use one protocol even the devices are provided from different manufacturers. Use the switch to set your dome control protocol and the baud rate. Refer to the table below and turn the arrow to choose a protocol for your speed dome.

Switch No.	Protocol	Baud Rate
00	VCL	9600
01	Pelco D	2400
02	Pelco P	4800
04	Chiper	9600
05	Philips	9600
07	DSCP	9600
08	AD422	4800
09	DM P	9600
11	Pelco D	4800
12	Pelco D	9600
13	Pelco P	2400
14	Pelco P	9600
15	JVC	9600

Select protocol: Pelco D, with switch no. 01 and baud rate 2400, for instance, the protocol switch should be set as below.



Decimal Digit Single Digit

NOTE: The number “0” should locate upwards as shown in the diagram above for correct switch definition.

3.4 Dome Cable Definition and Requirements

For operation, the integrated dome camera requires the video cable to carry the video signals to the remote viewing site, power cable to power the dome and RS485 data cable to carry commands from the control device.

3.4.1 Cable Requirements

For operation, the integrated high speed dome cameras require video and data cables as described below:

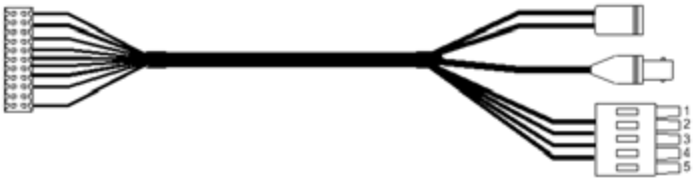
- The video cable sends video signals to a remote viewing site. Using a coaxial cable to send video signals is recommended.

- RS-485 cable carries commands from a control device to the dome cameras. A CAT 5, 24 gauge cable is recommended.
- The power cable provides either AC 24V or DC 12V power supply to the dome.

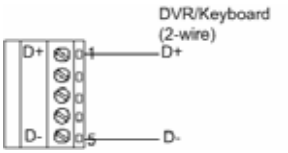
NOTE: Ensure power supply corresponds with the dome's power requirement, or product impairment will occur. If any mistake happens, please contact with a qualified maintenance engineer.

3.4.2 22-Pin Data Cable

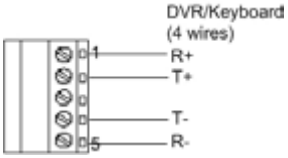
DC 12V Data Cable



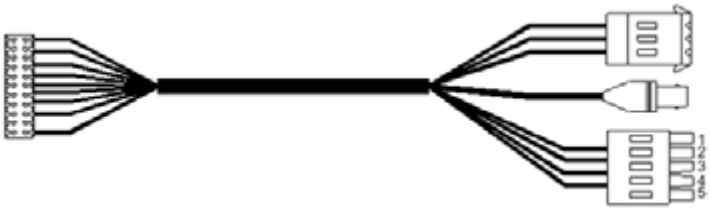
Power Input	DC12 Female Jack
Video Output	BNC Connector
RS485 Connector	2 wires



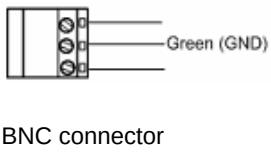
4 wires

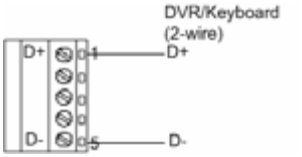


AC 24V Data Cable

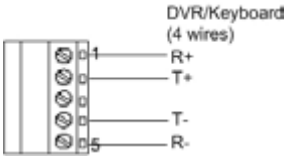


	3-Pin Terminal Block
Power Input	
Video Output	BNC connector
RS485 Connector	2 wires





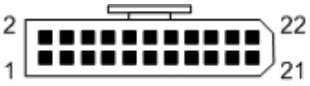
4 wires



NOTE: Be careful not to pull the cables improperly during installation. Additionally, it is suggested to fasten the cables after cable connection is completed. Furthermore, when wiring the power cable, make sure the G/Y wire (Ground) inserted into the mid-pin of the terminal block.

3.4.3 22-Pin Connector Definition

With the 22-pin connector, installers can simply connect the power, video and RS-485 cables to the dome at once. Particularly, the alarm pins are serviceable for connecting alarm input and output devices, such as alarm sensors, sirens or flashing lights with the surveillance system. For the definition of each pin, please refer to the list below.

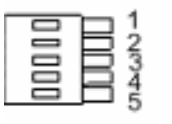


The 22-pin connector definition is listed as below.

Pin	Definition	Cable
1	AC 24-1/DC (+)	20AWG
2	ALM NC	
3	AC 24-2/DC (−)	20AWG
4	ALM NO	
5	FG	20AWG
6	ALM COM	
7	T+	24AWG
8	R-	
9	T-	
10	R+	
11	ISOG	
12	ALM-1	
13	ALM-3	
14	ALM-2	
15	ALM-4	
16	ALM-5	
17	ALM-6	
18	ALM-7	
19	ALM-8	
20	ALM GND	
21	VGND	24AWG
22	Video	

3.4.4 RS-485 Connector

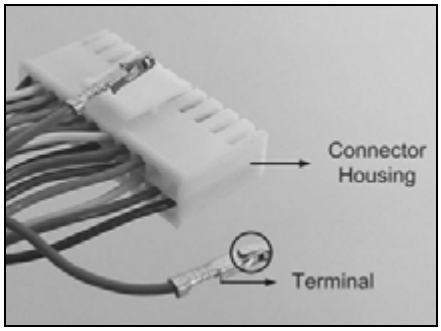
RS-485 is the interface that communicates the dome camera and its control device. Please connect the control keyboard to the speed dome through the terminal block. The recommended cables for RS-485 communication are **CAT 5** cables; maximum cable length for over 24-gauge wire is 4000 feet (1219 meters). If the total cable length exceeds 4000 feet, using a repeater to maintain the signals is recommended. Please refer to the figure and table below for pin defination and wiring.

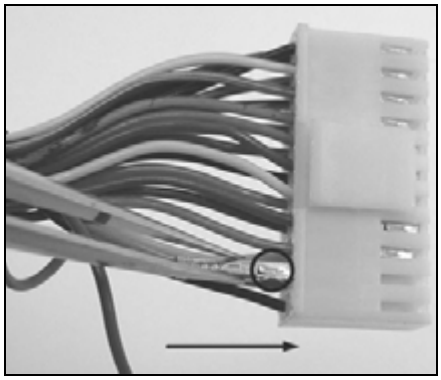
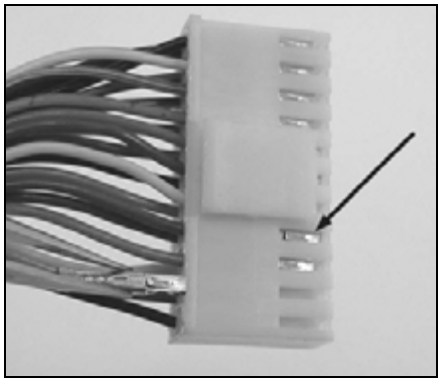
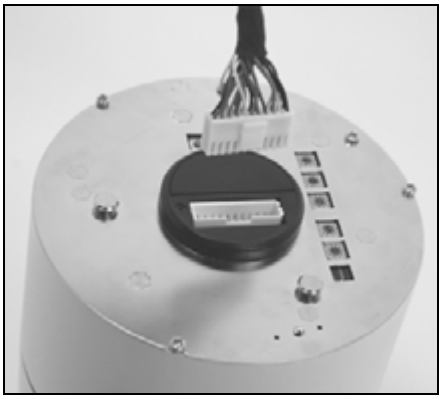


Pin	Corresponding Pins (22-Pin Connector)	Definition
1	7,10	T+, R+ (D+)
2~4	Reserved	
5	8,9	T-, R- (D-)

3.4.5 Cable Wiring and Connection

Users may need to do cable wiring when: (1) Connecting self-provided cords to the connector housing (shown in the figure below) instead of using the equipped data cable or (2) Connecting alarm input and output devices. The table follows will illustrate the way to wire cords into the connector housing (shown in the figures below). Please refer to the section 3.4.3 22-Pin Connector Definition for the exact position of each cord.



Insert the terminal into the pin holes on the connector housing, with the hook outward, as indicated in the figure.	
To unlock the terminal, press the hook, as indicated in the figure, with a proper tool and pull it out gently.	
Connect the 22-pin connector to the dome camera.	

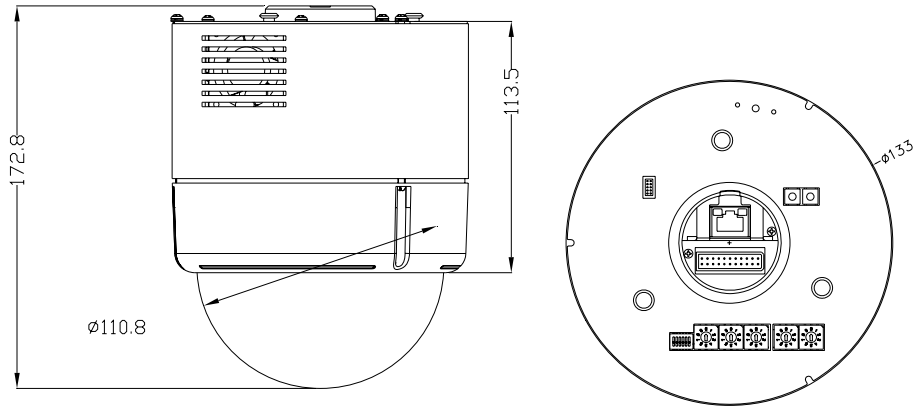
4. Dome Installation

Basing on user's installation environments, the dome can be installed on ceiling, on wall or on pole. In the following sections, various indoor dome installation accessories, installation methods and installation procedures will be described in detail. In addition, the next section will provide both indoor and outdoor domes' dimensions for your reference before installation.

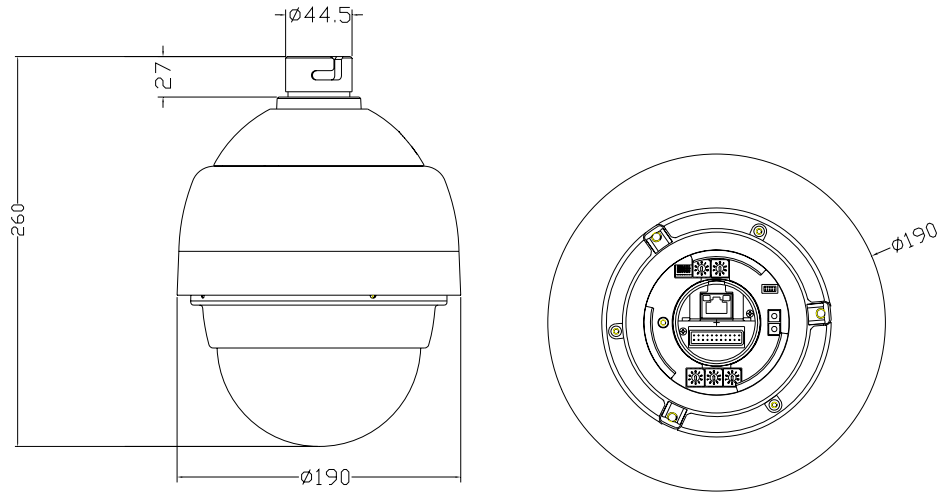
4.1 Dome Dimensions

The indoor dome dimension is ø133 x 173 mm (5.2 x 6.8 Inches). The outdoor dome dimension is ø172 x 260 mm (6.8 x 10.2 Inches) and ø190 x 260 mm (7.5 x 10.2 Inches) with sunshield. The diagrams below show detailed dimension for domes' different parts.

Indoor Dome Dimensions



Outdoor Dome Dimensions



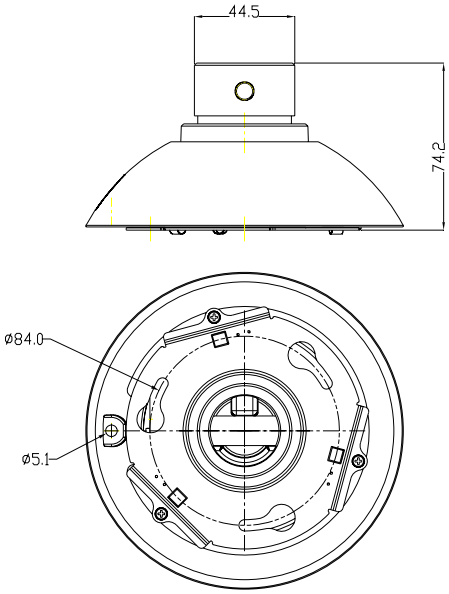
4.2 Optional Accessories

Indoor Dome Camera Accessories

Vandal Proof Cover
Diameter: 137 mm (5.4 inches)

Security Screw Set (equipped with Vandal Proof Cover)

Indoor Mount Kit
For mounting the indoor dome camera onto a gooseneck/straight tube.
White; Diameter: 140 mm (5.5 inches); Height: 74 mm (2.9 inches); 0.3 kg (0.7 lbs)
Attached Components: Waperproof Rubber, Hexagon Key, Lock Screw Plate, M5*8 screw×1, M5*8 security screw×1, M3*6 screw×1



Power Adapter
77H07-A1015 (Input: 100~115VAC/Output: 24VAC 36VA
77H07-A2015 (Input: 220~230VAC/Output: 24VAC 36VA)

NOTE: When wiring, make sure the G/Y wire (Ground) inserted into the mid-pin of the terminal block

Outdoor Dome Camera Accessories

Vandal Proof/Transparent/Smoke Cover
Diameter: 137 mm (5.4 inches)

Security Screw Set (equipped with Vandal Proof Cover)

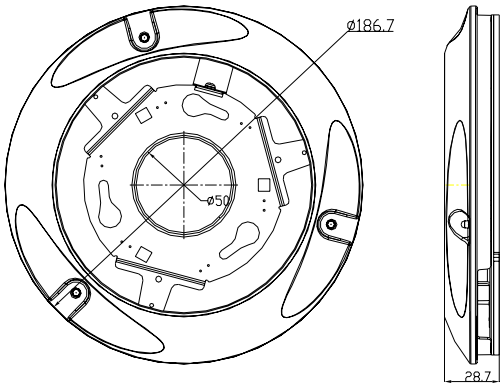
Power Adapter
77H07-A1030 (Input: 100~115VAC/Output: 24VAC 72VA)
77H07-A2030 (Input: 220~230VAC/Output: 24VAC 72VA)

NOTE: When wiring, make sure the G/Y wire (Ground) inserted into the mid-pin of the terminal block

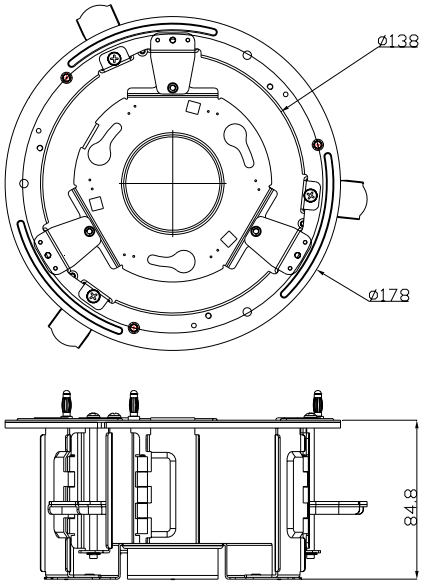
Sunshield (Outdoor Dome)
White Color, Height: 89.9 mm (3.54 inches); Diameter: 190 mm (7.48 inches); 0.15 kg (0.33 lbs)

Mounting Accessories

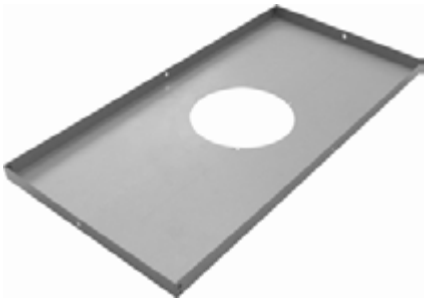
Hard Ceiling Mount
For Hard Ceiling use. Height: 19mm; Diameter of three holes: 4.5 mm; Diameter of the bracket: 158 mm; 0.2 kg (0.4 lbs)



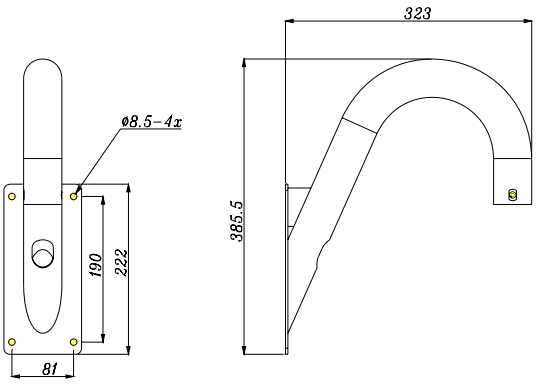
T-Bar Ceiling Mount, T-Bar Body Holder and Red Sticker
For in-ceiling Installation use.
T-Bar Ceiling Mount: Height: 85 mm (3.35 inches); Diameter: 180 mm (7.1 inches); 0.5 kg (1.1 lbs).Red Sticker: 155 +/- 3 mm (6.1 +/- 1.2 inches)



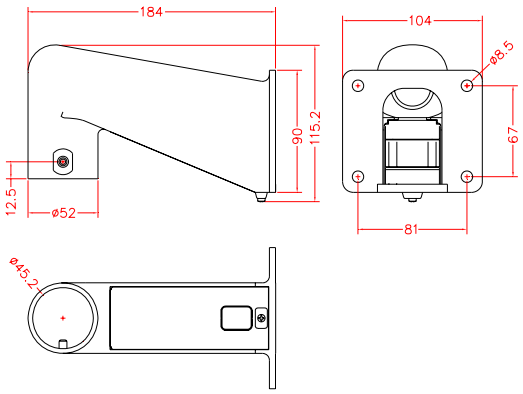
Ceiling Panel
For ceiling mounting. Zn platted; 610×305 mm (24×12 inches); Diameter: 155 mm (6.1 inches)



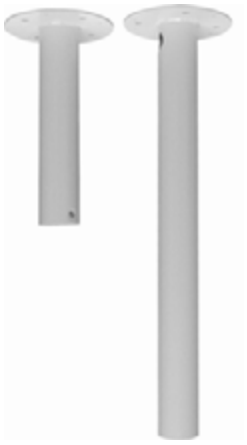
Gooseneck Tube
White Color; Iron, 298×385 mm (11.73×15.56 inches) ; 2.1 kg (4.6 lbs)
Supplied with rubber washer-8×1, pendant tube washer×1, spring washer-8×1 and waterproof rubber×1, M8*12 screw×1.

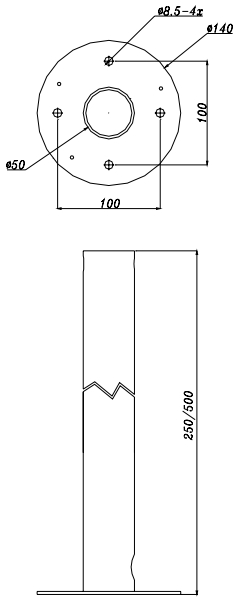


Mini Pendant Mount
White; 184×104×115.2 mm (7.24×4.09×4.54 inches); 0.6 kg (1.2 lbs). Supplied with rubber washer-8×1, pendant tube washer×1, spring washer-8×1 and M8*12 screw×1.

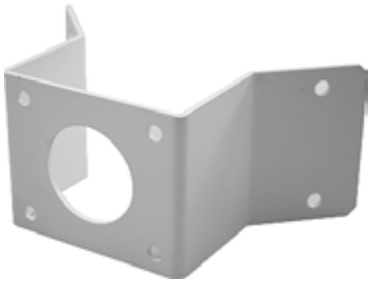


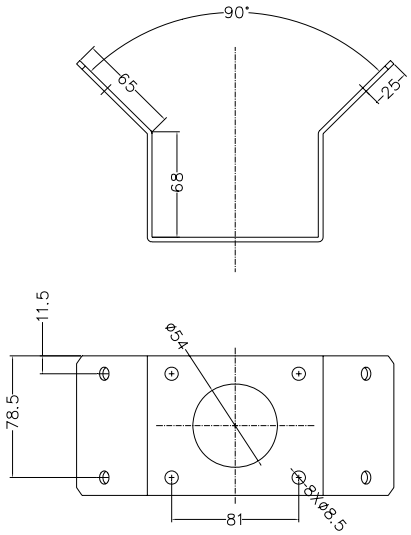
Straight Tube
White, Iron, Height: 250/500 mm (9.8/19.7 inches) ,Diameter: 50 mm (2 inches)
1 kg (2.2 lbs) / 1.8 kg (4 lbs), Supplied with rubber washer-8×1, pendant tube washer×1, spring washer-8×1 and waterproof rubber×1, M8*12 screw×1.



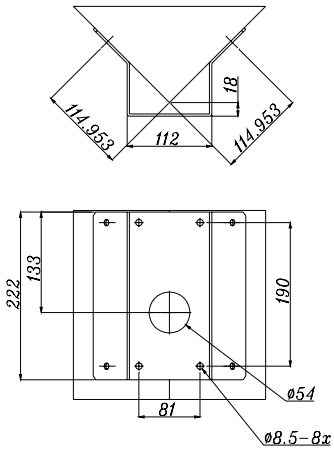


Corner Plate Mini
For mounting with Mini Pendent Mount.
White; 270(L)×166(W)×95(D) mm (8.7×8×4.6 inches); Supplied with washer-8×4, spring washer×4, M8*16 screw×4, M8 nut×4.

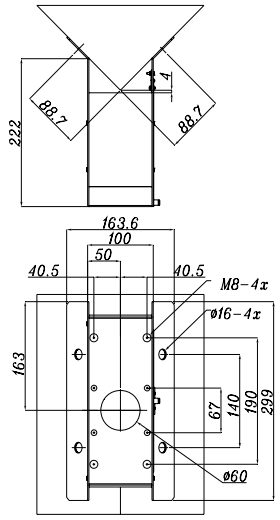




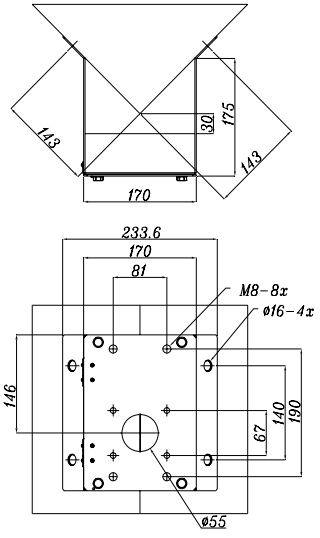
Corner Standard Mounting Plate
White, 222×204×117 mm (8.7×8×4.6 inches); 2 kg (4.4 lbs); Supplied with washer-8×4, spring washer×4, M8*16 screw×4, M8 nut×4.



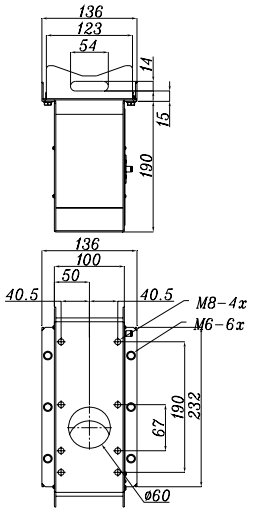
Corner Thin Box
White/Ivory, 300×164×222 mm (11.8×6.5×8.7 inches); 3 kg (6.7 lbs); Supplied with washer×4, M8*16 screw×4 and spring washer×4.



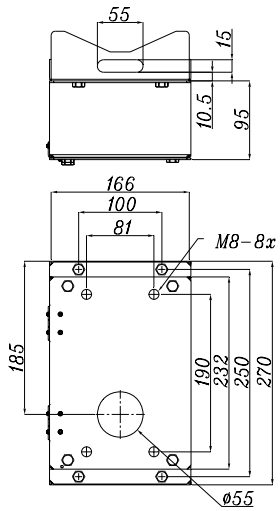
Corner Wide Box
White/Ivory; 232×234×210 mm (9.1×9.2×8.3 inches); 2.7 kg (6 lbs); Supplied with washer×4, M8*16 screw×4 and spring washer×4.



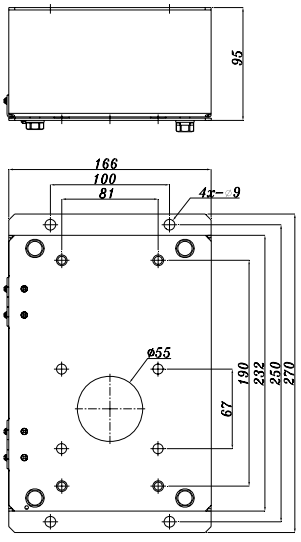
Pole Thin Box
White/Ivory; 291×136×242 mm (11.5×5.4×9.5 inches); 3.1 kg (6.9 lbs); Supplied with M8*16 screw×4, washer×4, spring washer×4, stainless steel straps×4.



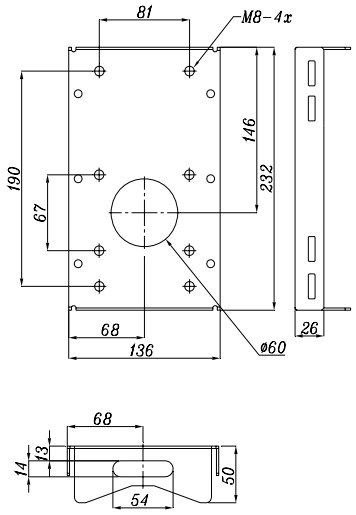
Pole Wide Box
White/Ivory, 270×166×155 mm (10.6×6.5×6.1 inches); 3.2 kg (7.1 lbs); Supplied with M8*16 screw×4, washer×4, spring washer×4, stainless steel straps×4.



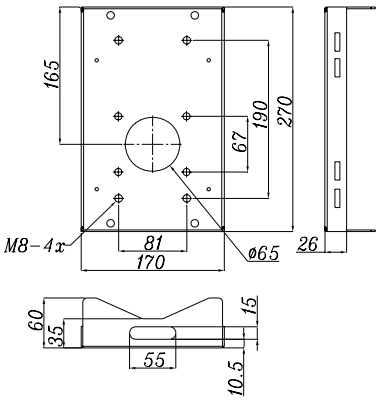
Wall Box Mounting
Ivory, 270(L)×166(W)×95(D) (10.6×6.5×3.7 inches); 2.2 kg (4.84 lbs); Supplied with M8*16 screw×4, washer×4, spring washer×4



Pole Thin Direct Mounting
White/Ivory, 232×136×60 mm (9.1×5.4×2.4 inches); Diameter: 112~140 mm (4.4~5.5 inches); 0.7 kg (1.6 lbs); Supplied with stainless steel straps×4, M8*16 screw×4, washer×4.



Pole Wide Direct Mounting
White/Ivory, 270×170×60 mm (10.6×6.7×2.4 inches); Diameter: 112~130 mm (4.4~5 inches); 1 kg (2.2 lbs); Supplied with stainless steel straps×4, M8*16 screw×4, washer×4.



Stainless Steel Straps
For fixing Pole Direct Mounting/ Pole Box on the pole.
Length: 700 mm (27.5 inches); Width: 0.63”; 0.02 kg (0.04 lbs)

Stainless Strap Cutter
For tension, cut and crimp stainless steel straps. 1.4 kg (3.1 lbs)
Suitable for straps width: 1/2”, 5/8”, 3/4”

Other Application Accessories

Repeater/Converter
D77R1: RS-485/RS-422 Repeater
D77R2: RS-232 between RS-485/RS-422
D77R3: Bi-phase to RS-485/RS-422

D77R1 D77R2 D77R3

Connector Box (Indoor Application)
Recommended for wiring indoor dome alarm cables. White Color. 92×42 mm (3.7×1.7 inches); 0.13 kg (0.3 lbs); Supplied with cable×1, bracket×1 and M3*6 screw×2.

Power Box
White, 186.5×147 mm (7.3×5.8 inches); 2.6 kg (5.8 lbs)
P1030 (Input: 110~115VAC/Output: 24VAC 72VA)
P2030 (Input: 220~230VAC/Output: 24VAC 72VA)

Signal Distribution Unit
Relay control codes to speed dome cameras.
Dimension: 432×44×90 mm (17×17.32×35.43 inches)

Coaxial Telemetry
Transmit video and RS-485 control signals via one BNC line.
Dimension: 100×90×28 mm (3.93×3.54×1.1 inches)

Front View Rear View

4.3 Ceiling Mount

Generally, there are three kinds of dome camera ceiling mounting methods: hard-ceiling, in-ceiling and mounting with straight tube. Refer to the following sections for more details.

The following figures show how cables connect to the dome camera in different ways.

Hard ceiling mount	In-ceiling mount
(Cables exposed)	(Cables recessed)

4.3.1 Hard Ceiling Mounting (Indoor)

Hard Ceiling Mounting is a standard installation for an indoor dome, and general Mounting accessories are equipped in the standard indoor dome camera package. Here lists the items and tools needed to mount the dome camera onto the ceilings. The supplied items are all in the dome camera package.

Items Needed:

- Dome Camera
- Hard Ceiling Mount and Decoration Ring (Supplied)
- Fixing Plate (Supplied)

Tools Needed:

- Tool for drilling
- (+,–) Screw Drive

Follow the steps to install the high speed dome camera for hard ceilings.

STEP 1

Screw the Fixing Plate to your dome body.

STEP 2

Remove the Hard Ceiling Mount from the Decoration Cover.

STEP 3

Attach the Mount to the ceiling. Mark the locations where all three ceiling holes should go.

STEP 4

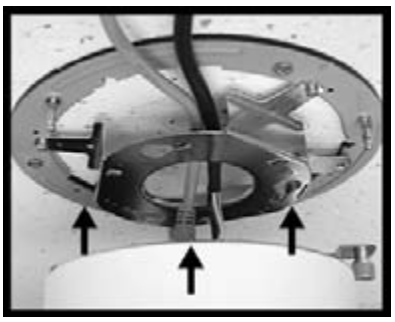
Drill these holes on the hard ceiling.

STEP 5

Fix the Mount with three screws.

STEP 6

Connect the data cable through the center hole of the Mount to the dome body.



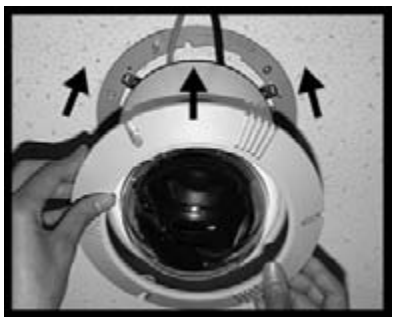
NOTE: If use an IP dome, a network cable is needed other than the data cable. In addition, the length of the network cable should be no longer than 2 cm.

STEP 7

Attach the dome body to the Mount and rotate the dome body clockwise. Tighten the fixing screw on the fixing plate.

STEP 8

Assemble the Decoration Ring to the Mount.



Completion

4.3.2 In-Ceiling Mounting (Indoor)

Here lists the items and tools needed to mount the dome camera into the ceilings. The supplied items are all in the dome camera package.

Items Needed:

- Dome Camera
- T-Bar (Optional Accessory)
- Supplied Screw (Equipped with T-Bar)
- Red Sticker (Equipped with T-Bar)
- Decoration Ring (Supplied)

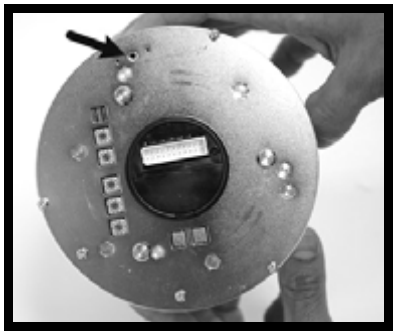
Tools Needed:

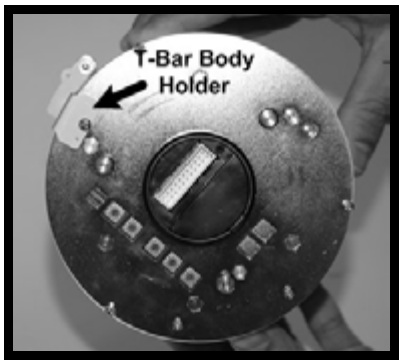
- Tool for cutting a circle on the ceiling
- (+,–) Screw Driver

Follow the steps to install the integrated high speed dome camera with T-Bar Ceiling mount accessory for in-ceiling mounting.

STEP 1

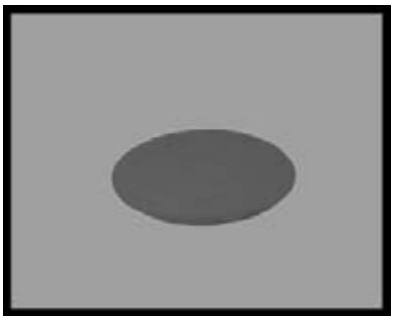
Screw the T-Bar Body Holder, which is equipped with the T-Bar, onto the dome back, as shown in the figures.





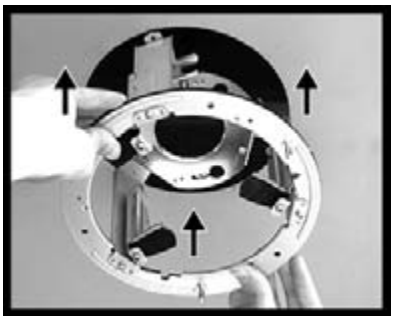
STEP 2

Place the Red Sticker on the ceiling plate, and cut the circle part out of the ceiling.



STEP 3

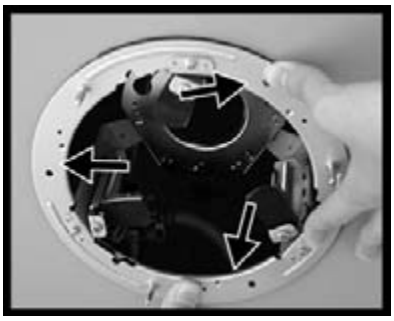
Put up the T-Bar into the ceiling hole.



NOTE: The T-Bar wings should be inward when putting up the T-Bar into the ceiling hole, as shown in the picture.

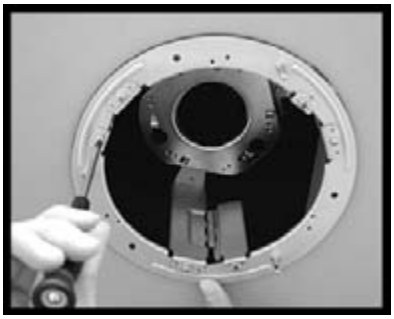
STEP 4

Rotate the T-Bar's wings to fix the T-Bar at the edge of the ceiling opening.



STEP 5

Tighten the screws on the wings.



STEP 6

Connect the data cable to the dome body through the center hole of the bracket.

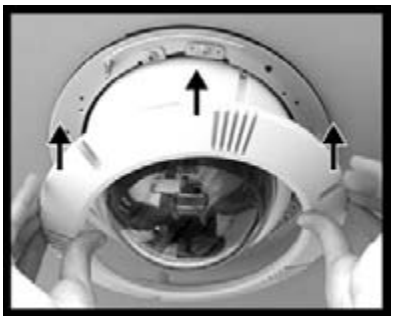
NOTE: If use an IP dome, a network cable is needed other than the data cable.

STEP 7

Mount the dome body onto the bracket and rotate it clockwise. Then ensure the dome body fastened firmly and screw the T-Bar Body Holder.

STEP 8

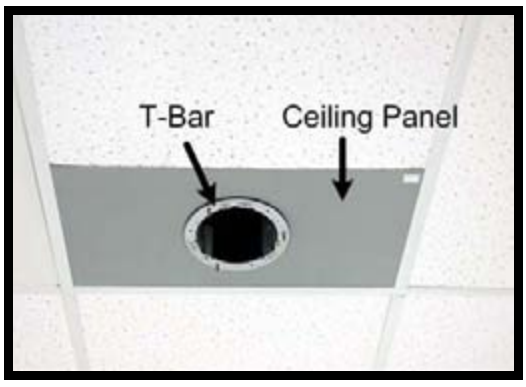
Assemble the Decoration Ring to the T-Bar.



Completion

4.3.3 In-ceiling Mounting with Ceiling Panel

To mount the dome camera to a suspended ceiling with the T-Bar, the ceiling panel could be employed, as shown in the figure below.



Follow the steps below for installing the ceiling panel.

Step 1: Cut the ceiling half.

Step 2: Put the ceiling panel upward to the ceiling opening.

Step 3: Attach and fasten the T-Bar mount onto the panel (Refer to the previous section **4.2.2 In-Ceiling Mounting** for further details).

4.3.4 Ceiling Mounting with Straight Tube

The straight tube is available in different length: 25 cm and 30 cm.

Items Needed:

- Dome Camera
- Straight Tube and other equipped items (optional accessory)
- Waterproof Rubber (standard accessory for the outdoor dome)
- Screws and Screw Anchors for fixing the straight tube onto the ceiling (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

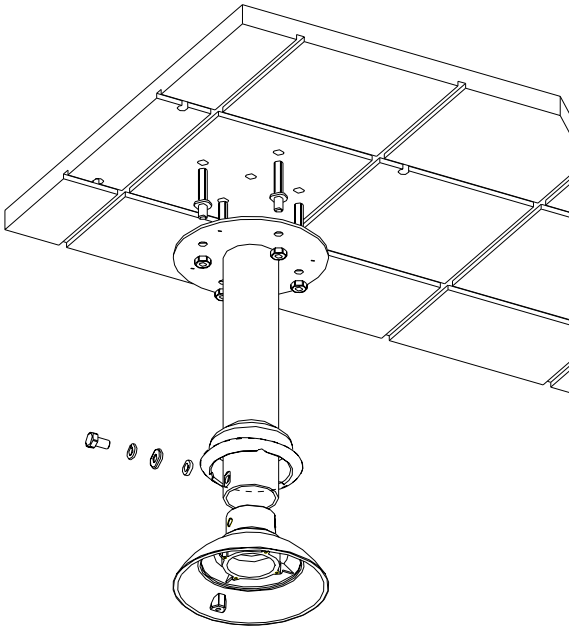
Follow the steps to mount the dome with the straight tube.

1) Ensure that the ceiling can support the weight of the dome camera and straight tube.
2) Make a cable entry hole on the ceiling.
3) Fix the Straight Tube to the ceiling with proper screws and screw anchors (not supplied).
4) Attach the waterproof rubber to the straight tube.
5) Thread the cables through the straight tube and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

6) Fix the top holder to the straight tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.
7) Connect the cables to the dome camera. Then attach the dome to the top holder and fix them with the supplied screw.

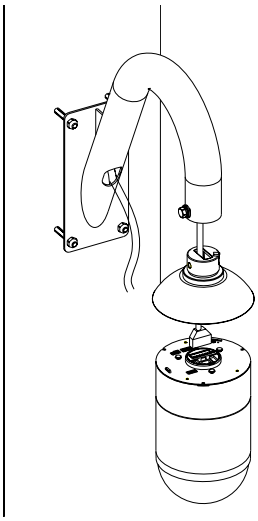
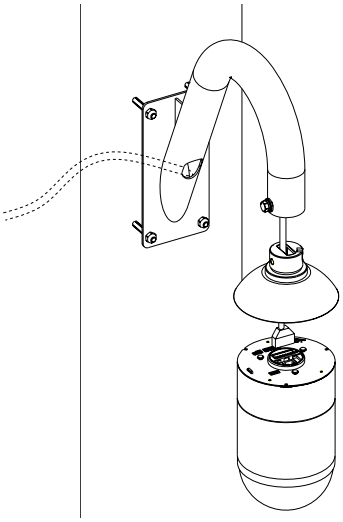
Ceiling Mount: Straight Tube + Waterproof Rubber



4.4 Wall Mount

4.4.1 Wall Mounting with Gooseneck Tube

The following figures show how cables run through the tube in different ways.

Cables exposed	Cables recessed
	

Items Needed:

- Dome Camera
- Gooseneck Tube and other equipped items (optional accessory)
- Waterproof Rubber (standard accessory for the outdoor dome)
- Screws and Screw Anchors for fixing the gooseneck tube onto the ceiling (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps to mount the dome with the gooseneck tube.

1) Make a cable entry hole on the wall to recess the cables. Otherwise, cables can be threaded through the cable entry hole on the tube.

2) Fix the Gooseneck Tube on the wall with proper screws and screw anchors (not supplied).

3) Attach the waterproof rubber to the gooseneck tube.

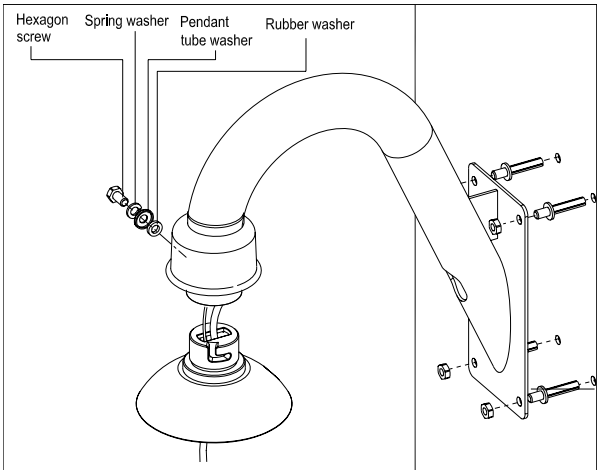
4) Thread the cables through the gooseneck tube and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

5) Fix the top holder to the gooseneck tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.

6) Connect the cables to the dome camera. Then attach the dome to the top holder and fix them with the supplied screw.

Wall Mounting: Gooseneck Tube + Waterproof Rubber



4.4.2 Mini Pendant Mount

Items Needed:

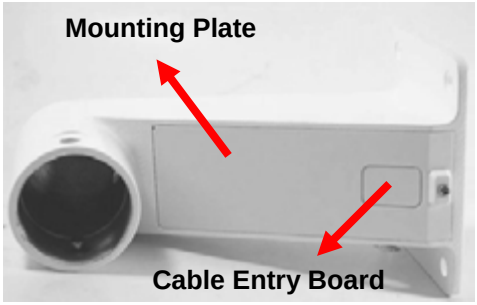
- Dome Camera
- Mini Pendant Mount and other equipped items (optional accessory)
- Waterproof Rubber (standard accessory for the outdoor dome)
- Screws and Screw Anchors for fixing the Mini Pendant Mount (not supplied)

Tools Needed:

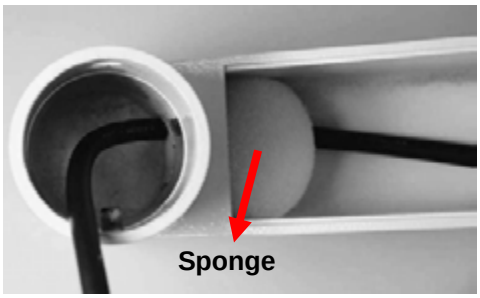
- Tool for drilling
- Tool for screwing

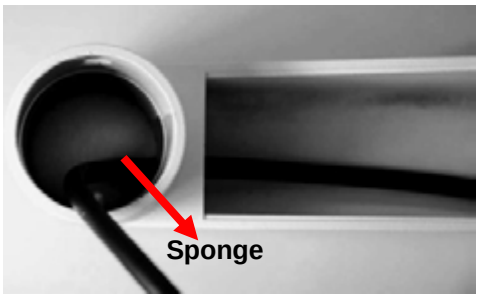
Follow the steps to mount the dome with the Mini Pendant Mount.

1) Make a cable entry hole on the wall to recess the cables. Otherwise, users could push up the cable entry board on the Mini Pendant Mount's mounting plate to place the cables, as shown in the photo below.



2) To avoid insects entering the pendant mount, you could block the cable entry hole with the supplied sponge in two ways. See the illustrations below.





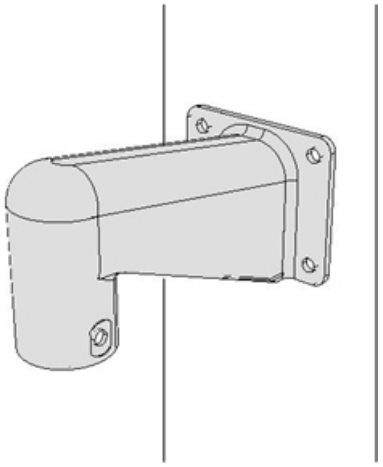
3) Thread the cables through the Mini Pendant Mount and fix the pendant mount on the wall with proper screws and screw anchors (not supplied).

4) If use an outdoor dome, attach the waterproof rubber to the Mini Pendant Mount.

5) Thread the cables through the top holder and fix it to the Mini Pendant

Mount with the supplied screws and washers.

6) Connect the cables to the dome camera. Then attach the dome to the top holder and fix them with the supplied screw.



4.4.3 Wall Box Mounting

Items Needed:

- Dome Camera
- Gooseneck Tube and other equipped items (optional accessory)
- Wall Box (optional accessory)
- Waterproof Rubber (standard accessory for the outdoor dome)
- Screws and Screw Anchors for fixing the wall box onto the ceiling (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps to mount the dome with the gooseneck tube and wall box.

1) Fix the Wall Box on wall with proper screws and screw anchors (not supplied).

2) Fasten the gooseneck tube on the wall box with the supplied screws and washers.

3) Attach the waterproof rubber to the gooseneck tube.

4) Thread the cables through the gooseneck tube and the top holder.

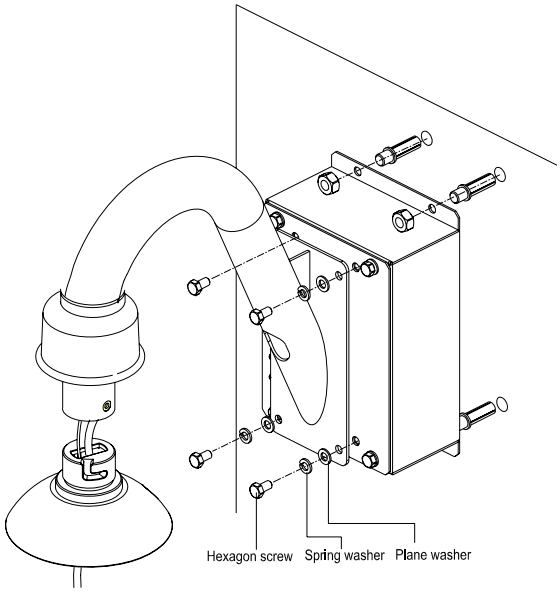
NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

5) Fix the top holder to the gooseneck tube with the supplied screws and

washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.

6) Connect the cables to the dome camera. Then attach the dome to the top holder and fix them with the supplied screw.

Wall Box Mounting: Wall Box Mount + Gooseneck Tube + Waterproof Rubber



4.5 Corner Mount

4.5.1 Corner Standard/Mini Mounting Plate

With the corner standard/mini mounting plate and gooseneck tube/mini pendant mount, the dome can be mounted on corner wall.

Items Needed:

- Dome Camera
- Gooseneck Tube/Mini Pendant Mount and other equipped items (optional accessory)
- Corner Standard/Mini Mounting Plate (optional accessory)
- Waterproof Rubber (standard accessory for the outdoor dome)
- Screws and Screw Anchors for fixing the Corner Standard Mounting Plate (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps below to mount the dome camera with the corner

standard/mini mounting plate and gooseneck tube/mini pendant mount.

1) Make a cable entry hole on the wall to recess the cables. Otherwise, cables can be threaded through the cable entry hole on the tube.

2) Fix the Corner Standard/Mini Mounting Plate on corner wall with proper screws and screw anchors (not supplied).

3) Attach the gooseneck tube/mini pendant mount to the fixed mounting plate with the supplied screws and washers.

4) Attach the waterproof rubber to the gooseneck tube/mini pendant mount.

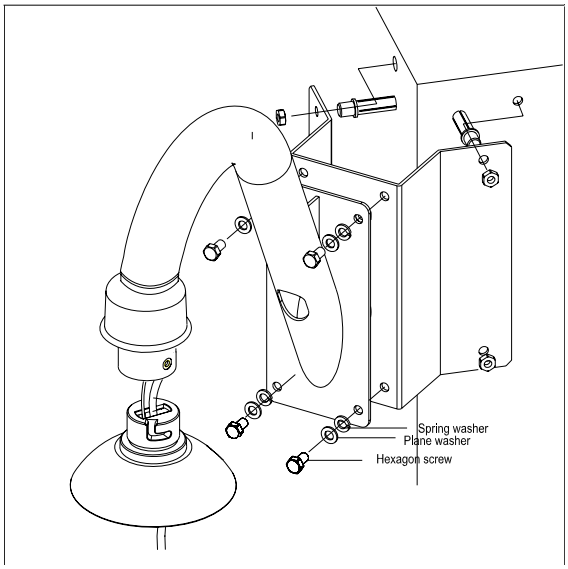
5) Thread the cables through the gooseneck tube/mini pendant mount and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

6) Fix the top holder to the gooseneck tube/mini pendant mount with the supplied screws and washers. Then adjust the waterproof rubber to the junction of gooseneck tube/mini pendant mount and top holder.

7) Connect the cables to the dome camera. Then attach the dome to the top holder and fix them with the supplied screw.

Corner Wall Mounting: Corner Standard/Mini Mounting Plate + Gooseneck Tube/Mini Pendant Mount + Waterproof Rubber



4.5.2 Corner Thin/Wide Box Mounting

The corner thin/wide box is designed to be installed with a gooseneck tube.

Items Needed:

- Dome Camera
- Gooseneck Tube and other equipped items (optional accessory)
- Corner Thin/Wide Box (optional accessory)
- Waterproof Rubber (standard accessory for the outdoor dome)
- Screws and Screw Anchors for fixing the Corner Thin/Wide Box (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps to mount the dome with the corner box and gooseneck tube.

1) Make a cable entry hole on the wall to recess the cables. Otherwise, cables can be threaded through the cable entry hole on the tube.

2) Fix the Corner Thin/Wide Box on corner wall with proper screws and screw anchors (not supplied).

3) Attach the gooseneck tube to the fixed corner box with the supplied screws and washers.

4) Attach the waterproof rubber to the gooseneck tube.

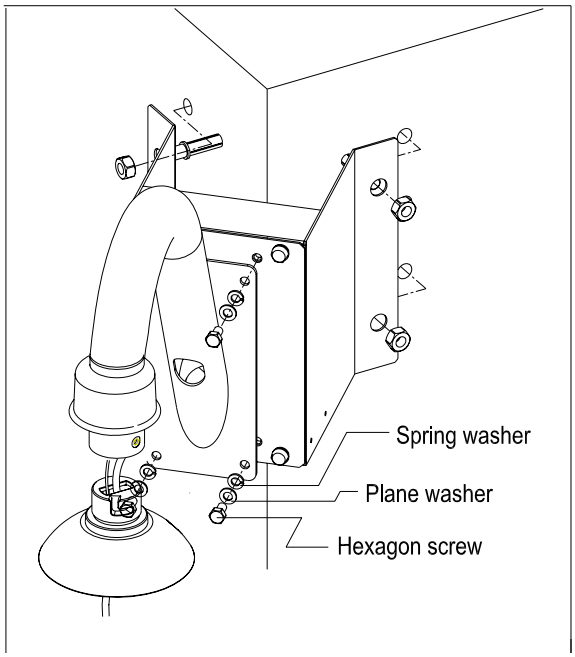
5) Thread the cables through the gooseneck tube and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

6) Fix the top holder to the gooseneck tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.

7) Connect the cables to the dome camera. Then attach the dome to the top holder and fix them with the supplied screw.

Corner Box Mounting: Corner Thin/Wide Box + Gooseneck Tube + Waterproof Rubber



4.6 Pole Mount

4.6.1 Pole Thin/Wide Direct Mounting

The dome can be installed on a pole with a thin/wide direct mounting accessory and a gooseneck.

Items Needed:

- Dome Camera
- Gooseneck Tube and other equipped items (optional accessory)
- Waterproof Rubber (standard accessory for the outdoor dome)
- Pole Thin/Wide Direct Mounting (optional accessory)
- Stainless Steel Straps (optional accessory)

Tools Needed:

- Stainless Strap Cutter
- Tool for screwing

Follow the steps below to mount the dome camera with the pole direct mounting and gooseneck.

1) Fasten the Pole Thin/Wide Direct Mounting on a pole with equipped stainless straps.

2) Fix the gooseneck tube on the pole direct mounting with the supplied

screws and washers.

3) Attach the waterproof rubber to the gooseneck tube.

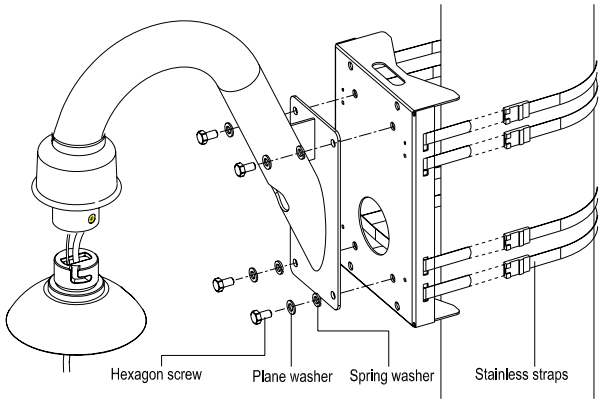
4) Thread the cables through the gooseneck tube and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

5) Fix the top holder to the gooseneck tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.

6) Connect the cables to the dome camera. Then attach the dome to the top holder and fix them with the supplied screw.

Pole Direct Mounting: Pole Thin/Wide Direct Mounting +Gooseneck Tube + Waterproof Rubber



4.6.2 Pole Thin/Wide Box Mounting

Items Needed:

- Dome Camera
- Gooseneck Tube and other equipped items (optional accessory)
- Waterproof Rubber (standard accessory for the outdoor dome)
- Pole Thin/Wide Box (optional accessory)
- Stainless Steel Straps (optional accessory)

Tools Needed:

- Stainless Strap Cutter
- Tool for screwing

Follow the steps to mount the dome camera with the pole box and gooseneck tube.

1) Fasten the Pole Thin/Wide Box on a pole with equipped stainless straps.

2) Fix the gooseneck tube on the pole box with the supplied screws and washers.

3) Attach the waterproof rubber to the gooseneck tube.

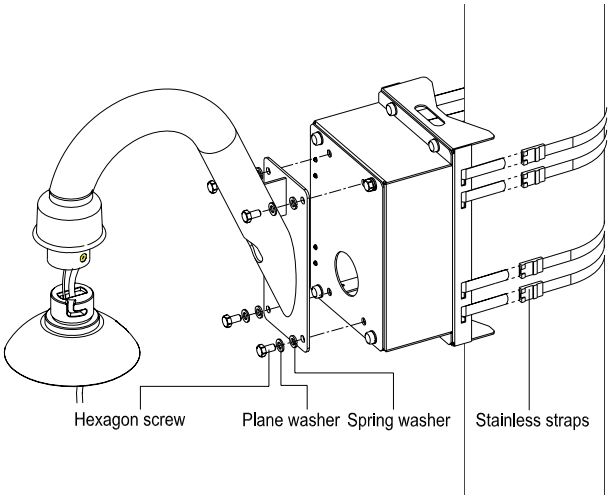
4) Thread the cables through the gooseneck tube and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

5) Fix the top holder to the gooseneck tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.

6) Connect the cables to the dome camera. Then attach the dome to the top holder and fix them with the supplied screw.

Pole Box Mounting: Pole Thin/Wide Box + Gooseneck Tube + Waterproof Rubber



5. System Expansion

5.1 Connecting with Connector Box (Indoor)

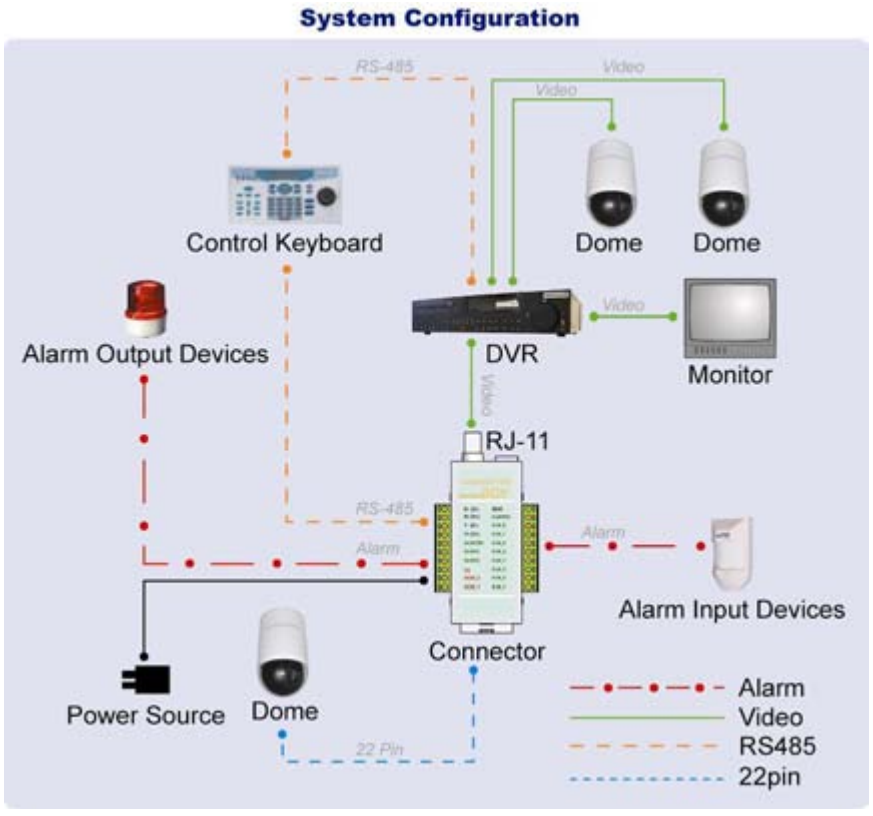
Ideally being used in indoor installation circumstances, a Connector Box provides easy wiring and well organized connection between alarms, cameras and other devices, for easy installation.

To connect the connector box with other devices:

- Use a RS-485 cable (CAT 5 is recommended) to complete RS-485 communication wiring with control devices such as DVRs and Control Keyboards.
- Use a 22-pin cable to connect the connector box to the dome.

For more detailed information, please refer to the connector box user's manual.

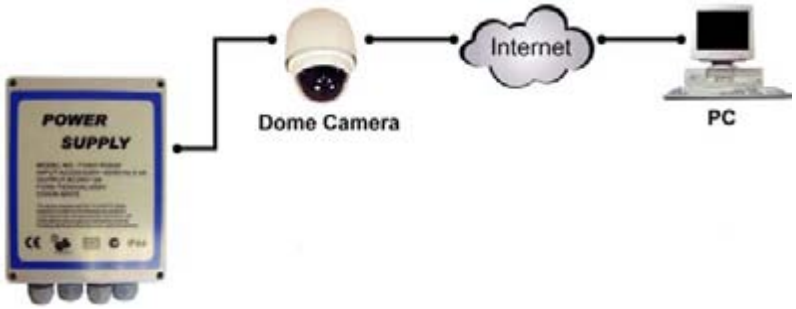
A system wired with a connector box is illustrated in the following diagram.



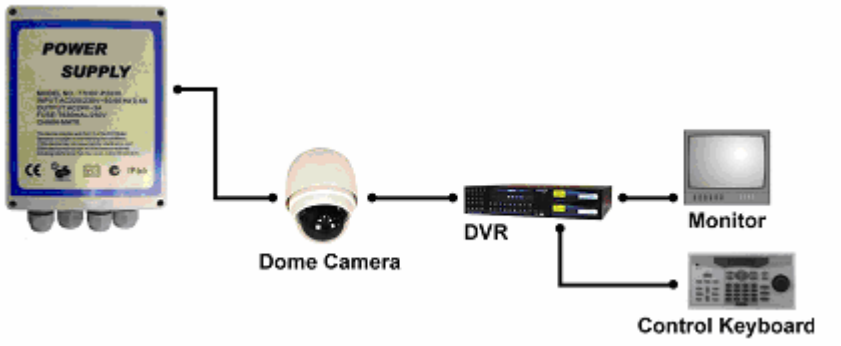
5.2 Connecting with Power Box (Outdoor)

A power box contains a 24V AC adapter, two terminal blocks (for communication and power) and one alarm board. With an IP66 case, the Power Box is ideal for outdoor installation environment. Two models are available: 100~115V AC power input (P1030) and 220~230V AC (P2030). Additionally, users can either connect one dome camera to one power box and to Internet or to other control devices (DVR, Control Keyboard and monitors), as shown in the diagrams below. For more detailed information, please refer to the power box user's manual.

Connecting the Dome to the Power Box and Internet



Connecting the Dome to the Power Box and Various Control Devices



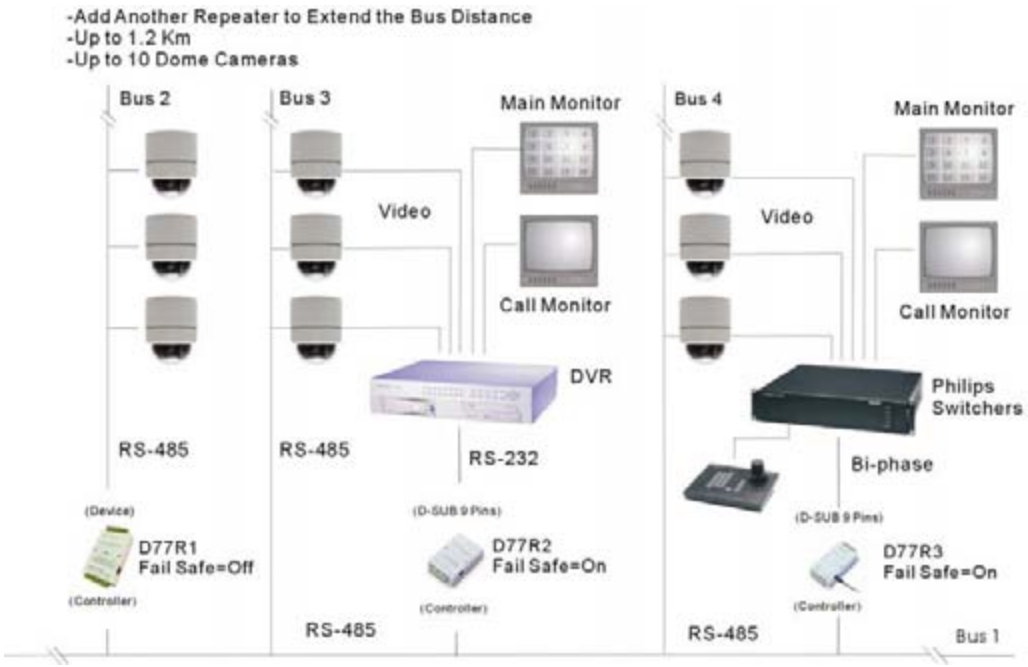
NOTE: One power box can only be connected to one outdoor dome camera subject to voltage restriction. In addition, up to two indoor dome cameras are allowed to be used with one power box.

5.3 Data Formats Transforming

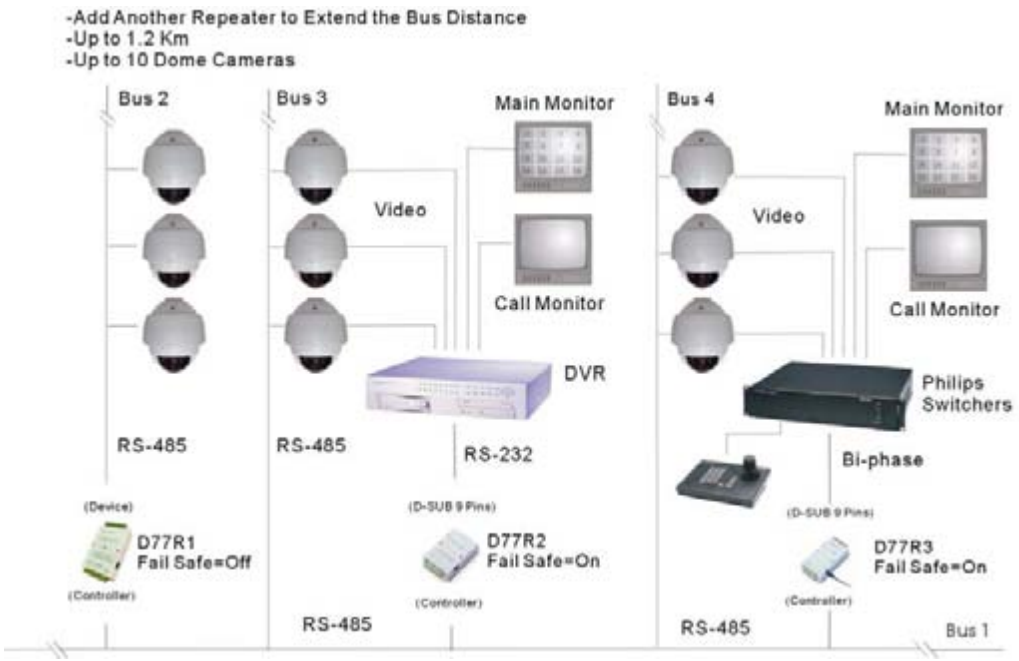
To integrate other surveillance devices with the high speed dome cameras, we provide three kinds of converter/repeater to transform the communication formats between devices. If a converter/repeater is used, the total network distance of the surveillance system can be extended, and the connected devices will also be protected. Up to 10 devices are allowed to connect to each repeater. For more detailed information, please refer to the converter/repeater user's manual.

D77R1 RS-485/RS-422 Repeater	**D77R2** RS-232 between RS-485/RS-422	**D77R3** Bi-Phase to RS-485/RS-422

Indoor Dome Application



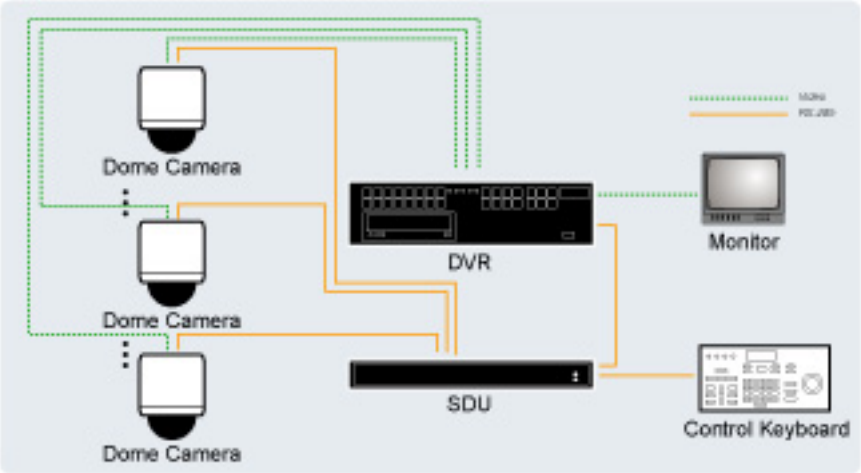
Outdoor Dome Application



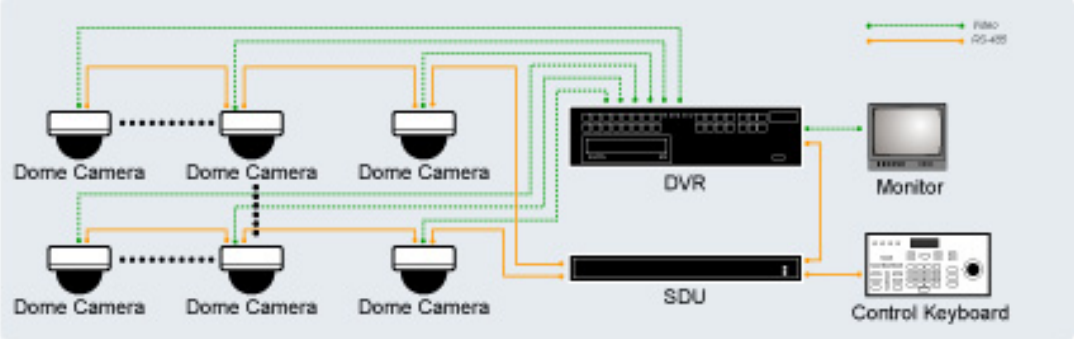
5.4 Signal Distribution Unit

The RS-485 Signal Distribution Unit (SDU) is designed to relay control codes to speed dome cameras. It is capable of communicating with cameras up to 1.0 kilometers away. Additionally, the SDU can be installed in either “star” or “daisy chain” configuration with up to 160 cameras (see the diagrams below). Its versatile installation configuration makes an easy integration into expanding surveillance systems. For more information, please refer to the SDU user’s manual.

Star Configuration

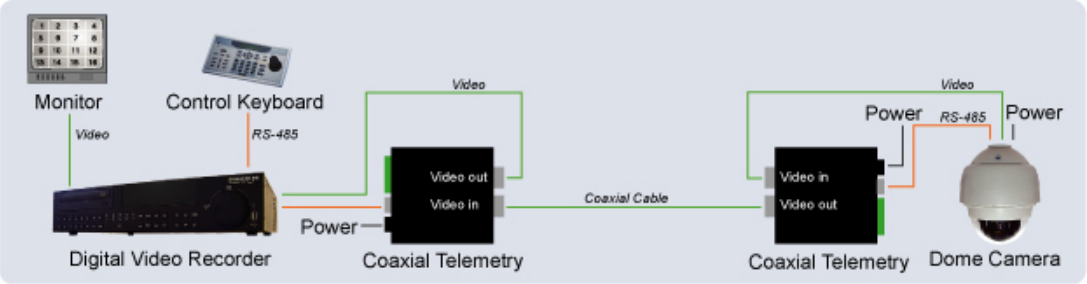


Daisy Chain Configuration



5.5 Coaxial Telemetry

The Coaxial Telemetry is a low-cost solution to long distance connection between dome cameras and controlling devices (e.g. DVR and keyboard). It simplifies the work of wiring by transmitting video and RS-485 control signals via one BNC line, so that to bring users economical benefits. The following is the coaxial telemetry application diagram. For more information, please refer to the coaxial telemetry's quick installation guide.



6. System Integration

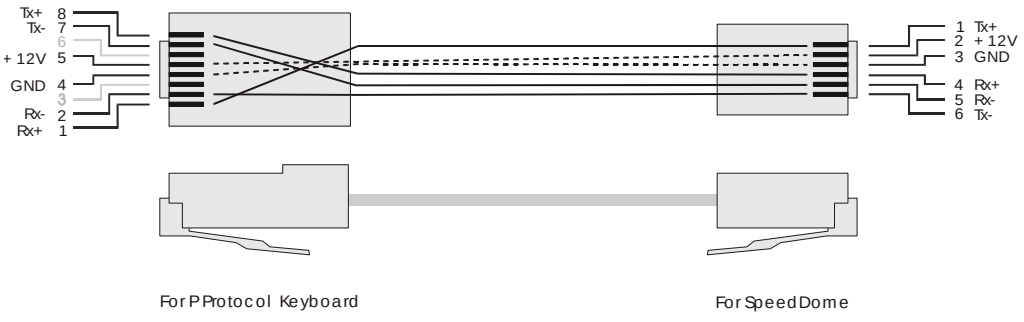
The dome camera is allowed to be integrated into other suppliers' surveillance systems with large set of built-in protocols. Refer to the following sections for more information.

6.1 Using Pelco Keyboard

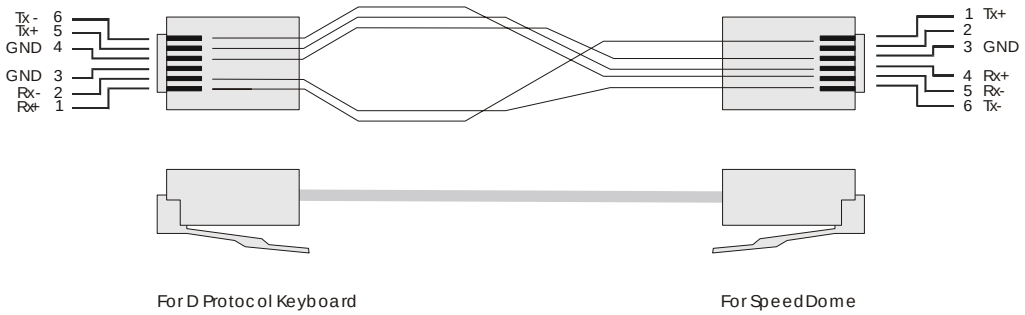
The speed dome camera can be controlled through a Pelco keyboard which built in with D protocol and P protocol. Please follow the instruction to manipulate our speed dome by a keyboard with D and P protocols.

Function	Instruction
Set Preset	Number key + press and hold <Preset > button for three seonds.
Go Preset	Number key + <Preset> to command a dome camera to go to a specific preset position.
Display or hide an OSD menu	7 7 <Preset>
Move the cursor in OSD menu	Move the cursor up/down/right/left by pushing the joystick up/down/right/left respectively
<ENTER>	7 7 <Preset>
Reset the dome camera	7 8 <Preset>

Cable Definition (P Protocol Keyboard to PTZ Camera)



Cable Definition (D Protocol Keyboard to PTZ Camera)



6.2 Using Philips Allegiant Keyboard

The dome cameras can be integrated into Philips Allegiant systems through D77R3 repeaters. Please follow the instructions to control dome cameras through Philips Allegiant systems.

Symbol Definition

<shot>	Command dome cameras to go to a specific preset position.
<set>	Set preset position.

Special Function

7 6 <set>	Exit the OSD menu directly.
7 7 <set>	1. Display or hide the OSD menu. 2. A virtual key to issue an ENTER command when the OSD is displayed.
7 8 <set>	Reset the doma camera.
<Iris Open>	Send an ENTER command when the OSD is displayed.

Control Dome Camera Using Allegiant Keyboard

- Users can move the cursor left/right/up/down through pushing the joystick left /right/up/down.

- Users cannot issue the ENTER command directly. To enable the function, press “ 7 7 <Set> “.

Appendix A: Technical Specification

Items		DH500	DH600
CAMERA			
CCD Sensor		1/4" EXview CCD	
Optical Zoom		12x	12x
Digital Zoom		1×~ 10× variable	
Effective Pixels	NTSC	380k	
	PAL	440k	
Horizontal Resolution		470 TVL	
Scanning System		NTSC / PAL	
Synchronization		Internal / Line Lock	
Video Output		1.0 Vp-p / 75 Ω, BNC	
Minimum Illumination		1 lux; 0 lux (IR illuminator)	
Focal Length		4~48 mm	
Focus Mode		Auto / Manual	
White Balance		Auto / Manual	
Iris Control		Auto / Manual	
Electronic Shutter	NTSC	1/60~1/10k sec.	
	PAL	1/50~1/10k sec	
AGC control		Auto / Manual	
Back Light Compensation		On / Off	
OPERATION			
Built-in Protocol		DynaColor, Pelco D&P, VCL, Philips, AD-422, JVC, etc.	
Pan Travel		720°	
Tilt Travel		-10°~100°	
Manual Speed		0.5°~55°/s	
Presets		256	
Preset Accuracy	Pan	0.225°	
	Tilt	0.5°	
Preset Speed	Pan	5°~300°/s	
	Tilt	5°~300°/s	
Cruise		1	
Sequence		8	
Auto Pan		4	
Proportional Pan & Tilt		On/Off (Pan and tilt speed proportional to zoom ratio)	
Resume after Power loss		Yes	
Zone Title		16	
Home Function		Preset, Sequence, Auto pan, Cruise	
Auto Flip		Mechanical/Off	
Day/Night: IR Cut Filter		On / Off	
Alarm Input		8	
Alarm Output		1	
Alarm Reaction		Preset, Sequence, Auto pan, Cruise	
GENERAL			
Environment		Indoor	Indoor / Outdoor
Controller Interface		RS-485	
Operating Temperature		0°C ~ 40°C (32°F ~ 104°F)	-30°C ~ 45°C (-22°F ~ 113°F)
Waterproof Standard		-	IP66 standard

Dimension	⌀133 x 173 mm (5.2 x 6.8 Inches)	⌀172 x 260 mm (6.8 x 10.2 Inches); ⌀190 x 260 mm (7.5 x 10.2 Inches) w/ sunshield
Weight	1.2 kg (2.6 lbs)	2.1 kg (4.6 lbs)
Power Source	DC12V/AC24V ± 10%	AC24V ± 10%
Power Consumption	14 W	52 W (with Heater)
Regulatory	CE, FCC, RoHS	

All Specifications are subject to change without notice.

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Head Office:
Ness Security Products Pty Ltd
ABN 28 069 984 372
Ph +61 2 8825 9222 Fax +61 2 9674 2520
ness@ness.com.au

NSW
Ph 02 8825 9222 Fax 02 9674 2520
sales@ness.com.au

VIC
Ph 03 9875 6400 Fax 03 9875 6422
nessmelb@ness.com.au

QLD
Ph 07 3399 4910 Fax 07 3217 9711
nessbris@ness.com.au

WA
Ph 08 9328 2511 Fax 08 9227 7073
nessper@ness.com.au

SA
Ph 08 8152 0000 Fax 08 8152 0100
adelaide@ness.com.au

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